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EXAMINER

NGUYEN, HANH N

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2834

DATE MAILED: 03/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/970,259

Examiner

HANH NGUYEN

Applicant(s)

KOHARAGI ET AL.

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☒ Claim(s) 1-15 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "the difference in arrangement of the magnetic insertion hole and the flux barrier" (refer to claim 8) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: "river hole in Col. 11, line 3 should be "rivet hole", "by contract" in Col. 13, line 13 and Col. 25, line 13 should be "by contrast" Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 13 is rejected under 35 U.S.C. 112, first paragraph. It is unclear what is "180-degree current-applied sinusoidal wave inverter".

4. Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph to as failing to point out and distinctly claiming the subject matter which the applicant regards as his invention. Claims 1-13 refer to "a permanent magnet type rotating electrical machine". The addition of the word "type" to an otherwise expression extends the scope of the expression so as to render it indefinite. Ex parte Copenhaver, 109 USPQ 118 (Bd. App. 1955) ; Ex parte Attig, 7 USPQ2d 1092 (Bd. Pat. App. & Inter. 1986).

Claims 14,15 are independent claims.

5. Claim 5 recites the limitation "said flux barrier" in line 6. There is insufficient antecedent basis for this limitation in the claim (refer to claim 1).

6. Claims 6 and 7 recite the limitation "the rotor core", "said rotor" and "the poles". There is insufficient antecedent basis for theses limitations in the claims.

7. Claim 8 recites the limitation "said flux barrier". There is insufficient antecedent basis for theses limitations in the claim (refer to claims 1,4,6,7).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takezawa et al. in view of Kenji et al

Regarding claim 1, Takezawa et al. show a permanent magnet rotating electrical machine comprising; a stator provided with armature wiring in multiple slots on a stator core (Fig. 9), a rotor core split into multiple parts in the axial direction and containing permanent magnets built in multiple permanent magnet insertion holes (inherent in Fig. 9), said permanent magnet type rotating electrical machine characterized in that said first rotor core is arranged so that the gap length of the magnetic path on the q-axis side is greater than that on the d-axis side (because of concave portion 32-35 provided between the poles in the vicinity of the outer surface of the core as shown in shown in fig. 9 and 13). The permanent magnet motor disclosed by Takezawa et al. fails to show a second rotor core for producing reluctance torque.

However, Kenji et al. disclose the permanent magnet motor wherein the rotor core (13) with embedded permanent magnets is intergraded with the second core (16) without embedded magnets to generate only reluctance torque for the purpose to attain high efficiency motor by increasing reluctance torque (Abstract).

Since Takezawa et al. and Kenji et al. are in the same field of endeavor, the purpose disclosed by Kenji et al. would have been recognized in the pertinent art of Takezawa et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to include a portion of a rotor without embedded magnets for producing only reluctance torque as taught by Kenji for the purpose to attain high efficiency motor by increasing reluctance torque.

Regarding claim 2 and 6 Takezawa et al. also show all the limitations of the claimed invention except showing a second rotor core for producing reluctance torque includes a flux barrier having almost the same form as that of said permanent magnet insertion hole is formed on said second rotor core in the cross section in the radial direction.

However, the permanent magnet motor disclosed by Kenji et al. having a second rotor core includes a flux barrier (14 in Fig. 3) having almost the same form (oval slot shape) as that of said permanent magnet insertion hole is formed on said second rotor core (11 in fig. 4) in the cross section in the radial direction for the purpose to generate large reluctance torque and increase motor efficiency.

Since Takezawa et al. and Kenji et al. are in the same field of endeavor, the purpose disclosed by Kenji et al. would have been recognized in the pertinent art of Takezawa et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to include a second rotor core includes a flux barrier having almost the same form as that of said permanent magnet insertion hole is formed on said second rotor core in the cross section in the radial direction as taught by Kenji for the purpose to generate large reluctance torque and increase motor efficiency.

Regarding claims 3 and 7, Kenji et al. also show the rotor wherein an almost true round peripheral shape are formed on said second rotor core in the cross section in the radial direction.

Regarding claim 4, Kenji et al. also show the rotor wherein said second rotor core has a hole having almost the same form as that of said permanent magnet insertion hole wherein said hole is devoid (without) of permanent magnet (abstract).

Regarding claim 5, Kenji et al. also show the rotor wherein the width of said permanent magnet insertion hole on said first rotor core is designed greater than that of said flux barrier or said hole provided on said second rotor core as can be seen clearly in drawing 4.

9. Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takezawa et al. in view of Kenji et al. and further in view of Narita et al.

Regarding claim 8 Takezawa et al. and Kenji et al. show all the limitations of the claimed invention except showing a that arrangement of said permanent magnet insertion hole provided on said first rotor core is different from that of said flux barrier or said hole provided on said second rotor core.

However, the permanent magnet motor disclosed by Narita et al. having a the arrangement of said permanent magnet insertion hole provided on said first rotor core is different from that of said flux barrier or said hole (Fig. 12) provided on said second rotor core for the purpose to prevent magnets from immigrate to the flux barrier holes.

Since Takezawa et al., Kenji et al. and Narita et al. are in the same field of endeavor, the purpose disclosed by Narita et al. would have been recognized in the pertinent art of Takezawa et al. and Kenji et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to make arrangement of said permanent magnet

insertion hole provided on said first rotor core different from that of said flux barrier or said hole provided on said second rotor core as taught by Kenji for the purpose to prevent magnets from immigrate to the flux barrier holes.

Regarding claim 9, Narita et al. also show a permanent magnet type rotating electrical machine wherein the number of flux barriers or holes provided on said second rotor core is greater than that of said permanent magnet insertion holes provided on said first rotor core (Fig. 15).

Regarding claim 10, Narita et al. also show a permanent magnet type rotating electrical machine wherein said permanent magnet insertion holes provided on said first rotor core and the flux barriers or holes provided on said second rotor core are formed in a straight line or shaped like a letter U or V (Fig. 8,13,18).

Regarding claim 11, Narita et al. also show a permanent magnet type rotating electrical machine wherein said permanent magnet insertion holes provided on said first rotor core and the flux barriers or holes provided on said second rotor core are formed like a letter duplicate U or V (Fig. 22).

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takezawa et al. in view of Kenji et al. and Narita et al. and further in view of Yoshifumi.

Regarding claim 12 Takezawa et al., Kenji et al. and Narita et al. show all the limitations of the claimed invention except showing a permanent magnet type rotating electrical machine wherein non-magnetic substances are inserted in the flux barriers or holes provided on said second rotor core.

However, Yoshifumi shows a permanent magnet rotating electrical machine wherein non-magnetic substances (caulking pin 6 in Col. 1 lines 25-30) are inserted in the flux barriers or holes (14 in Fig. 7) for the purpose to carry the balance weight.

Since Takezawa et al., Kenji et al., Narita et al. and Yoshifumi are in the same field of endeavor, the purpose disclosed by Yoshifumi would have been recognized in the pertinent art of Takezawa et al., Kenji et al. and Narita et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to form a permanent magnet type rotating electrical machine wherein non-magnetic substances are inserted in the flux barriers or holes provided on said second rotor core as taught by Yoshimu for the purpose to carry the balance weight.

11. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takezawa et al. in view of Kenji et al. and Narita et al., Yoshifumi and further in view of Moreira.

Regarding claim 13 Takezawa et al., Kenji et al. Narita et al. and Yoshimu show all the limitations of the claimed invention except showing a permanent magnet type rotating electrical machine driven by a 180-degree current-applied sinusoidal wave inverter without magnetic pole position sensor.

However, the permanent magnet motor disclosed by Moreira shows an inverter bridge (Fig. 4) for the purpose to control the operation of a permanent magnet motor (Abstract).

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Since Takezawa et al., Kenji et al, Narita et al. Yoshifumi and Moreira are in the same field of endeavor, the purpose disclosed by Moreira would have been recognized in the pertinent art of Takezawa et al., Kenji et al., Narita et al. and Yoshimu.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to form an inverter bridge for the purpose to control the operation of a permanent magnet motor as taught by Moreira for the purpose to control the operation of a permanent magnet motor.

Regarding claim 14 and 15, Yoshimu also shows the compressor of an air conditioner to be driven by said permanent magnet motor.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh N Nguyen whose telephone number is (703) 305-3466. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

HNN

TRAN NGUYEN
PRIMARY EXAMINER

Tran Nguyen
Patent Examiner
Technology Center
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